

Cell Cycle Analysis: the research and the technology

Friday 4th October 2013 09:00-17:00

Cineworld: The O2
London
SE10 0DX
United Kingdom

This meeting will present and discuss current research into cell cycle regulation including new approaches available to study this regulation.

This event is part of the 2013 Flow Cytometry Forum – www.FlowCytometry2013.com

This event has CPD accreditation.

Meeting Chair: *Dr Michael G Ormerod*, Consultant, UK

The Deadline for abstract submissions has now passed. Abstracts for *poster presentation only* can be submitted up to two weeks before the event. There will be a *best poster prize*.

You can download the instructions for authors at
www.euroscicon.com/AbstractsForOralAndPosterPresentation.pdf

Who Should Attend

Flow cytometry specialists

Biotech and Pharma Industry: CEOs, Chief Scientists, Group Heads, Senior and Junior Scientists, Research Managers

Academic and Research Institutes: Group and Lab Heads, Postdoctoral Scientists and Research Students

Talk times include 5 – 10 minutes for questions

9:00 – 9:45 **Registration**

9:45 – 10:00 **Introduction by the Chair:** *Dr Michael G Ormerod*, Consultant, UK

10:00 – 10:40 **Nuclear Envelope Influences on the Cell Cycle**

Dr. Eric C. Schirmer, University of Edinburgh, Scotland

The nuclear envelope (NE) is a double membrane system surrounding the nucleus that can influence the cell cycle in several different ways. Failure to properly disassemble the NE in prophase can block mitosis or result in lagging chromosomes. Moreover, many NE proteins appear to have separate roles in mitosis once disassembled. Finally, several NE proteins can impact on checkpoints and pathways that allow cell cycle progression and some can directly bind the master cell cycle regulator pRb to stabilize and sequester it. This latter can result in these NE proteins having both positive and negative effects depending on associated factors.

10:40 – 11:20 **Sensing oxygen stress in the cell**

Dr. Sonia Rocha, FSB, Centre for Gene Regulation and Expression College of Life Sciences, University of Dundee, Scotland

Hypoxia Inducible Factor-1 (HIF-1) is essential for mammalian development and is the principal transcription factor activated by low oxygen tensions. HIF- α subunit quantities and their associated activity are regulated in a post-translational manner, through the concerted action of a class of enzymes called Prolyl Hydroxylases and Factor Inhibiting HIF respectively. These enzymes are the cell molecular oxygen sensors. We have been investigating other molecular processes altered by oxygen these include global chromatin structure and the cell cycle. We shall be presenting our latest results concerning the molecular mechanisms connecting oxygen sensing to some of these important cellular processes.

11:20 – 12:00 **Speakers' photo then mid-morning break and poster exhibition and trade show**

Please try to visit all the exhibition stands during your day at this event. Not only do our sponsors enable Euroscicon to keep the registration fees competitive, but they are also here specifically to talk to you.

12:00 – 12:40 **The role of the transcriptional networks in controlling cell cycle progression and genome stability**

Robert de Bruin, MRC Laboratory for Molecular Cell Biology University College London

The eukaryotic cell cycle is controlled by a regulatory network whose general features are conserved from yeast to humans. Our work investigates the G1/S transcriptional network involved in two crucial aspects of cell cycle regulation, cell division cycle control and maintenance of genome stability. Our recent work reveals how cells cope with the deregulated activities of G1/S transcription factors, which creates specific cellular requirements for replication control and genome protection mechanisms. Since deregulated G1/S transcription is found in nearly all types of cancers our future work will explore how these vulnerabilities could be exploited to identify potential anti-cancer drug targets.

12:40 – 14:00 **Lunch, poster exhibition and trade show**

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14:00 – 15:00 **Question and Answer Session**

15:00 – 15:30 **Afternoon Tea, last poster session and trade show**

15:30 – 16:10 **Oxidative stress and the regulation of the cell cycle**

Professor Brian Morgan, Personal Chair of Yeast Molecular Biology, Institute for Cell and Molecular Biosciences Newcastle University, UK

Oxidative stress caused by high levels of reactive oxygen species (ROS) is intimately linked with common diseases such as cancer. However, ROS are also beneficial with low levels utilised as signalling molecules. Thus, to develop effective clinical strategies to target the “bad” health consequences of ROS it is vital to understand how cells respond to different levels of ROS. For example, the cell cycle is inhibited by oxidative stress to prevent damage/allow repair. We are using yeast as a model to investigate cellular oxidative stress responses and I will describe a novel regulatory mechanism important for cell cycle progression.

16:10 – 16:50 **p53, the cell cycle, and opportunities for clinical exploitation**

Dr David W Meek, Jacqui Wood Cancer Centre/CRC, University of Dundee, Scotland

The p53 tumour suppressor plays a fundamental role in inhibiting or delaying the development of most types of cancer. p53 is a transcription factor which controls cell cycle checkpoints and apoptosis by orchestrating changes in gene expression in a stimulus-dependent manner. I will discuss recent developments in our understanding of how p53 controls the crucial cell cycle-regulatory enzyme, PLK1 (polo-like kinase-1) and the significance of this model for breast cancer development and treatment. I will also present our progress in understanding how MAGE-A proteins (Melanoma AntiGENs) block p53 activity and discuss novel approaches towards inhibiting these proteins therapeutically.

16:50 – 17:00 **Chairman’s summing up**

Keywords: Flow Cytometric & Image Analysis, Necrobiology, Apoptosis, Flow cytometry, apoptosis, Image Stream, T cells, Immunosenescence, Wnt, colorectal cancer, GMP-compliant, cytotoxicity Humira, ADCC, CDC, Cell death, proliferation dyes, cell imaging, cell morphology, Flow cytometry, nuclear envelope, NET, lamin, cell cycle, mitosis, Hypoxia, HIF, PHD, G1-to-S transition, G1/S transcription, Replication checkpoint, Genome stability, p53, cell cycle, checkpoints, tumour antigens, Cell cycle regulation, oxidative stress, reactive oxygen species, *Saccharomyces cerevisiae*

Registration Website: <http://www.regonline.co.uk/cellcycle2013>

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news and events and to be notified of the follow up to this event

This meeting was organised by Euroscicon (www.euroscicon.com), a team of dedicated professionals working for the continuous improvement of technical knowledge transfer to all scientists. Euroscicon believe that they can make a positive difference to the quality of science by providing cutting edge information on new technological advancements to the scientific community. This is provided via our exceptional services to individual scientists, research institutions and industry.

About the Chair:

Michael G Ormerod was previously employed as a Senior Scientist at the Institute of Cancer Research, London. Since taking early retirement, he has been self-employed as research Consultant and trainer. He has taught on courses on flow cytometry in venues, world-wide. He recently published 'Flow Cytometry - a Basic Introduction, available at http://flowbook.denovosoftware.com/Flow_Book

About the Speakers:

Eric C. Schirmer did his PhD with Susan Lindquist on chaperone-prion interactions and Post-doc with Larry Gerace on intermediate filament assembly. He started his own lab at the University of Edinburgh at the end of 2004, where he studies nuclear envelope proteome tissue specificity and its contributions to spatial genome organisation, cell cycle regulation, cytoskeletal organisation, differentiation and human disease.

Sonia Rocha obtained her undergraduate degree from Porto University, Portugal. She received her Ph.D from the ETH-Zurich, Switzerland, then moved to Scotland to conduct postdoctoral work in the group of Neil Perkins at the University of Dundee. In October 2005, Sonia was appointed Principal Investigator in the College of Life Sciences, University of Dundee. In 2010, was awarded Tenure and in 2011 she received a Cancer Research-UK Senior Research Fellowship. She is currently deputy director of the Centre for Gene Regulation and Expression and was recently elected a Fellow of the Society of Biology.

David Meek has a long-standing track record in p53 research. He has made significant contributions to understanding how post-translational modification of p53, and its regulatory partner, MDM2, regulates cell cycle checkpoints and apoptosis. He is currently exploring the relevance of p53-associated events to cancer development and identifying interactions that have mechanistic significance in the development of the disease, or offer potential as therapeutic targets. This includes understanding p53-dependent repression of the key cell cycle-regulatory enzyme, PLK1, and its impact on breast cancer development and treatment; and design of novel agents to block MAGE-A proteins, drivers of oncogenesis that inhibit p53 function.

Robert de Bruin has been a Group Leader at the MRC Laboratory for Molecular Cell Biology, University College London, since 2009. He carried out his doctoral work at the Vrije Universiteit, Amsterdam, the Netherlands, and then did postdoctoral studies with Curt Wittenberg at The Scripps Research Institute, La Jolla, California, USA. His laboratory studies cell cycle regulated transcription and genome stability in yeast and humans.

Brian Morgan has been studying the regulation of the cell division cycle and the responses of cells to reactive oxygen species since his appointment to a Lectureship at Newcastle University in 1996. After obtaining his PhD in Molecular Biology at the University of Edinburgh, he performed postdoctoral work with Professor Mitch Smith at the University of Virginia (USA), studying the role of histone posttranslational modifications, and then with Dr. Lee Johnston at the MRC NIMR (Mill Hill, London), studying the regulation of the cell division cycle and oxidative stress responses.

NOTES ABOUT THIS EUROSCICON EVENT

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- You will be issued with a FULL delegate list within 14 days of the event, which will include the email addresses of the delegates (we are sorry that there is this delay in emailing the list, but we need to make sure that it takes into account any late arrivals). You will not be included in this list if you have opted out and you can do this by logging into your registration details. This list will not be sold or ever give out to third parties. Only people attending or sponsoring the event have access to the list
- There may be an independent meeting report published within a few months of this event. If this is published we will send you an email to let you know the reference details
- Notepads and pens are available from the Euroscicon reception desk
- We cannot give out the slides from our speaker's presentations as they are deleted immediately after each event. If you require a particular set of slides please approach the speaker
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- We may take pictures during the meeting. These pictures will be used to promote our events and placed on our various websites and the closed Euroscicon group on Facebook. If you do not want your photograph distributed please let one of the Euroscicon staff know.

